

We claim:

1. A method for detecting a binding factor for a probe, comprising:
 - 5 (a) labeling the probe with a fluorophore;
 - (b) incubating the labeled probe with a factor or a group of factors which may bind the labeled probe to form a binding complex;
 - (c) separating the binding complex and the free probe into different fractions; and
 - 10 (d) subjecting each fraction from step (c) to fluorescence polarization measurement under conditions wherein the binding complex produces a fluorescence pattern different from that of the free probe, thereby allowing detection of the binding complex.
- 15 2. The method of claim 1 wherein the free probe and the complex are separated by using capillary electrophoresis.
3. The method of claim 1 wherein the group of factors comprises a chemical compound library.
- 20 4. The method of claim 4 wherein the chemical compound library is a combinatorial library.
5. The method of claim 1 wherein the group of factors comprises a mixture of natural products.
- 25 6. The method of claim 6 wherein the mixture of natural products comprises a cell lysate.
- 30 7. The method of claim 1 wherein the group of factors comprises nucleic acid.

8. The method of claim 7 wherein the nucleic acid is genomic DNA.
9. The method of claim 8 wherein the probe is capable of binding to modified DNA.
- 5 10. The method of claim 10 wherein the modified DNA is a DNA adduct.
11. The method of claim 1 wherein the probe is selected from the group consisting of protein and nucleic acid.
- 10 12. The method of claim 1 wherein the probe has a molecular weight of less than about 10,000 daltons.
13. The method of claim 1 wherein the probe has a molecular weight of less than about 5,000 daltons.
- 15 14. The method of claim 1 wherein the probe has a molecular weight of less than about 3,000 daltons.
- 20 15. The method of claim 1 further comprising the step of determining binding affinity and/or stoichiometry between the probe and the binding factor.
16. The method of claim 1 wherein the fluorophore is fluorescein.
- 25 17. A method for detecting a nucleic acid damage in a nucleic acid sample, comprising:
(a) incubating the sample with
(i) a polypeptide which is capable of binding the damaged nucleic acid;
and

- (ii) a fluorophore-labeled probe which is capable of forming a complex with the polypeptide to compete with the damaged nucleic acid for the polypeptide; and
 - (b) analyzing the incubation mixture under conditions wherein the complex formed between the probe and the polypeptide produces a fluorescence pattern different from that of a free probe.
- 18. The method of claim 17 wherein the polypeptide is an antibody which is capable of binding damaged DNA.
- 19. The method of claim 17 wherein the DNA damage is a covalent modification.
- 20. The method of claim 17 wherein the DNA damage is a benzopyrene addition.
- 21. The method of claim 17 wherein the DNA sample is genomic DNA.
- 22. A method for detecting a fluorophore labeled probe, comprising:
 - (a) incubating a probe with a fluorophore under conditions which allow labeling of the probe by the fluorophore; and
 - (b) subjecting the incubation mixture to fluorescence polarization under conditions wherein the fluorophore labeled probe produces a fluorescence pattern which is different from that of a free probe which is not labeled by the fluorophore.
- 23. The method of claim 22 further comprising the step of fractionating the incubation mixture.